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Air and Radiation (6205J)



# Stay Healthy in the Sun

## Information About UV Radiation for Meteorologists



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# Introduction

This publication contains information about the health risks posed by ultraviolet (UV) radiation and describes the steps people can take to protect themselves from overexposure to the sun. This information is designed to help meteorologists when they broadcast a UV Index report.

In 1994, the U.S. Environmental Protection Agency (EPA) and the National Weather Service (NWS) introduced the UV Index as a daily report on the UV radiation levels people may experience. The Index predicts the next day's levels on a 0 to 10+ scale.

This booklet contains both general sun safety tips as well as specific health advisories for each UV Index level. These tips and advisories are the product of close

cooperation between EPA, NWS, the American Academy of Dermatology, the American Meteorological Society, and representatives of the broadcast meteorology community who actively broadcast weather information to the public.

## **Facts and Figures**

- There has been an 1,800 percent rise in malignant melanoma since 1930.
- One American dies of skin cancer every hour.
- One in five Americans develops skin cancer.
- People get 80 percent of their lifetime sun exposure by the age of 18.

# Why Worry About Too Much Sun?

UV radiation from the sun can seriously threaten human health.

## Sunburn

The most obvious result of too much sun is sunburn, which involves skin redness and sometimes tenderness, swelling, blistering, fever, and nausea. Although some skin types prevent individuals from burning, everyone is at risk for other UV-related health effects.

## Premature wrinkling

In the long run, too much exposure to the sun can change your skin's texture, giving it a tough, leathery appearance. The sun also can cause discolorations in skin tone including red, yellow, gray, or brown spots.

## Skin cancer

Over time, exposure to the sun and severe sunburns can lead to skin cancer. The most common places for skin cancer to develop are on those body parts exposed to the sun such as the face, neck, ears, forearms, and hands.

The three main types of skin cancer are basal cell carcinoma, squamous cell carcinoma, and malignant melanoma.

- Basal cell carcinomas are tumors that usually appear as small, fleshy bumps or nodules.
- Squamous cell carcinomas appear as nodules or as red, scaly patches.
- Malignant melanomas may appear without warning as a dark mole or other dark spot in the skin.

All three types can be curable if you detect them in their early stages. To help recognize potential problems, conduct periodic self-examinations and watch for growths that meet one of the 'ABCDs' of melanoma:

**Asymmetry:** One half of the growth doesn't match the other half.

**Border irregularity:** The edges of the growth are ragged, notched, or blurred.

**Color:** The pigmentation of the growth is not uniform. Shades of tan, brown, and black are present. Dashes of red, white, and blue also may appear.

**Diameter:** Any growth greater than 6 millimeters (about the size of a pencil eraser) is cause for concern.

If you notice any changes in the appearance of moles or freckles, contact a dermatologist.

## Sun sensitivity

Some people may develop bumps, hives, blisters, or red blotchy areas as an allergic reaction to sun exposure. Certain drugs, perfumes, and cosmetics also can make some people sensitive to the sun.

## Immune system suppression and disease

No matter what your skin type or susceptibility to burns, sun exposure can damage your immune system and make your body more vulnerable to infections and cancers. Diseases, such as herpes simplex (cold sores), chicken pox, and lupus, can become worse with sun exposure.

## Eye damage


The American Academy of Ophthalmology has cautioned that excess exposure to UV radiation can cause a painful burn of the cornea. Chronic eye exposure to UV radiation may increase the incidence of 'cataract,' which is a clouding of the eye lens; 'pterygium,' in which a fleshy membrane covers the eye; and possibly 'macular degeneration,' or the development of spots that could result in blindness.


### UVA vs. UVB


There are two types of UV radiation, UVA and UVB. UVB is usually associated with sunburn while UVA is recognized as a deeper penetrating radiation.


# General Sun Safety Tips


You can use the following general messages to help educate your viewers about how they can avoid over-exposure to the sun on any day. The remainder of the booklet contains messages that apply directly to each UV Index level.

 **Minimize exposure** to the sun during the hours when exposure could be most damaging, **from 10 a.m. to 4 p.m.** Typically, exposure at 8 a.m. or 4 p.m. is only one-third that at midday. Try getting outdoor activities accomplished during minimum exposure hours. Remember, however, you can still get a sunburn even in the mid-afternoon.

 **Remember that incidental time in the sun can add up** to long-term sun damage, including the time spent walking the dog, window shopping, performing outdoor chores, or jogging at lunch. Even on overcast days, 30 to 60 percent of the sun's rays can penetrate to the Earth's surface.

 **Wear a hat** and other protective clothing, as well as sunglasses, to protect your body from too much sun.

 **Use 'broad spectrum sunscreens,'** which are those that contain active ingredients that absorb at least 85 percent of the UVA and UVB rays of the sun. Read labels carefully and choose a broad spectrum sunscreen with a Sun Protection Factor (SPF) of at least 15, which filters out both UVA and UVB radiation.

 **Apply sunscreen liberally** to all exposed skin, about 20 minutes before exposure, especially to easily overlooked areas like the rims of the ears, the back of the neck, and the tops of the feet. For an average adult, the recommended dose is 1 ounce, or one quarter of a 4-ounce bottle, per application. Reapply every 2 hours, after being in the water, or after exercising and sweating.

# Using the UV Index

The UV Index can help the public be aware of the level of UV radiation exposure expected on a given day. As a result, people can use simple sun protective behaviors to reduce their lifetime risk of developing skin cancer and other sun-related illnesses. What follows is a description of each UV Index level and tips you can give to help people prepare.

## 0 to 2 **Minimal**

A UV Index reading of 0 to 2 means minimal danger from the sun's UV rays for the average person:

- Most people can stay in the sun for up to 1 hour during the hours of peak sun strength, 10 a.m. to 4 p.m., without burning.
- People with very sensitive skin and infants should always be protected from prolonged sun exposure.

### **Look Out Below**

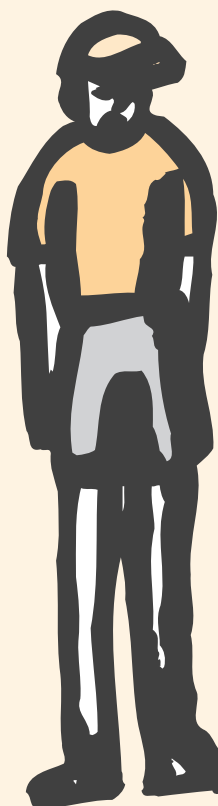
Snow and water can reflect the sun's rays. Skiers and swimmers should take special care. Wear sunglasses or goggles, and apply sunscreen with an SPF of at least 15. Remember to protect areas that could be exposed to UV rays by the sun's reflection, including under the chin and nose.

0-2

## 3 to 4 Low

A UV Index reading of 3 to 4 means low risk of harm from unprotected sun exposure. Fair-skinned people, however, might burn in less than 20 minutes:

- Wear a hat with a wide brim and sunglasses to protect your eyes.
- Use a sunscreen with an SPF of at least 15 and wear long-sleeved shirts and long pants when outdoors.



## Me and My Shadow

An easy way to tell how much UV exposure you are getting is to look for your shadow:

- If your shadow is **taller** than you are (in the early morning and late afternoon), your UV exposure is likely to be **low**.
- If your shadow is **shorter** than you are (around midday), you are being exposed to **high** levels of UV radiation. Seek shade and protect your skin and eyes.

# 5-6



## 5 to 6 **Moderate**

A UV Index reading of 5 to 6 means moderate risk of harm from unprotected sun exposure. Fair-skinned people might burn in less than 15 minutes. Apply a sunscreen with an SPF of at least 15. Wear a wide-brim hat and sunglasses to protect your eyes:

- Use sunscreen if you work outdoors and remember to protect sensitive areas like the nose and the rims of the ears. Sunscreen prevents sunburn and some of the sun's damaging effects on the immune system.
- Use a lip balm or lip cream containing a sunscreen. Lip balms can help protect some people from getting cold sores.

### **Made in the Shades**

Wearing sunglasses protects the lids of your eyes as well as the lens.



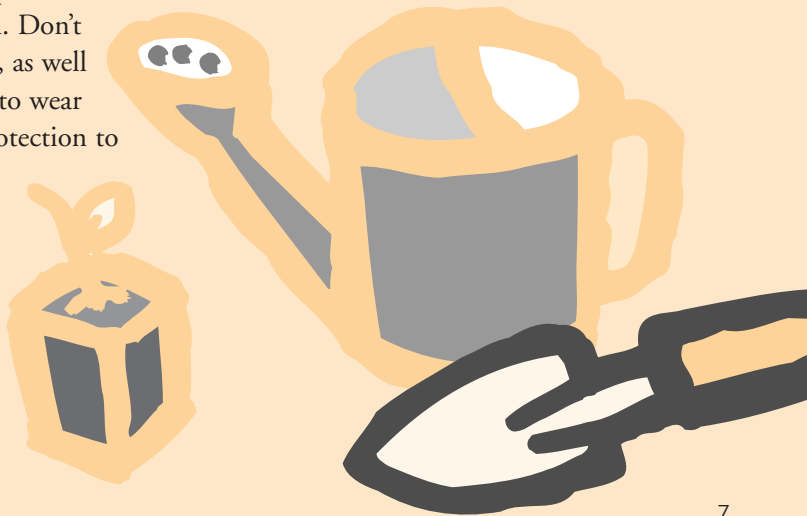
## 7 to 9 High

A UV Index reading of 7 to 9 means high risk of harm from unprotected sun exposure. Fair-skinned people might burn in less than 10 minutes. Minimize sun exposure during midday hours, from 10 a.m. to 4 p.m. Protect yourself by liberally applying a sunscreen with an SPF of at least 15. Wear protective clothing and sunglasses to protect the eyes:

- When outside, seek shade. Don't forget that water, sand, pavement, and grass reflect UV rays even under a tree, near a building, or beneath a shady umbrella.
- Wear long-sleeved shirts and trousers made from tightly woven fabrics. UV rays can pass through the holes and spaces of loosely knit fabrics.

### Stay in the Game

Be careful during routine outdoor activities such as gardening or playing sports. Remember that UV exposure is especially strong if you are working or playing between the peak hours of 10 a.m. and 4 p.m. Don't forget that spectators, as well as participants, need to wear sunscreen and eye protection to avoid too much sun.





## 10+ **Very High**

A UV Index reading of 10+ means very high risk of harm from unprotected sun exposure. Fair-skinned people might burn in less than 5 minutes. Outdoor workers are especially at risk as are vacationers who can receive very intense sun exposure. Minimize sun exposure during midday hours, from 10 a.m. to 4 p.m. Apply sunscreen with an SPF of at least 15 liberally every 2 hours:

- Avoid being in the sun as much as possible.
- Wear sunglasses that block 99 to 100 percent of all UV rays (both UVA and UVB). Some reduction in blue light also might be beneficial but colors should not be severely distorted.
- Wear a cap or hat with a wide brim, which will block roughly 50 percent of UV radiation from reaching the eyes. Wearing sunglasses as well can block the remainder of UV rays.

### **Beat the Heat**

If possible, stay indoors on days when the UV Index is very high. Take the opportunity to relax with a good book rather than risk dangerous levels of sun exposure. Try not to pursue outdoor activities, whether at work or at play, unless protected with sunscreen, hat, and sunglasses.

# For More Information

For more information about the UV Index, contact EPA's Stratospheric Protection Hotline at 800 296-1996 or visit the UV Index web site at <[www.epa.gov/ozone/uvindex/uvover.html](http://www.epa.gov/ozone/uvindex/uvover.html)>.

## Acknowledgments

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